Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

We Claim:

1. (Currently Amended) A light homogenizing optical sheet, comprising: a ~~planar~~ substantially constant thickness sheet made of transparent material with ~~parallel~~ front and back surfaces, each said front and back surface including a microlens array formed thereon, said microlens array each including a plurality of non-hemispherical microlenses each aligned and registered with a non-hemispherical microlens on an opposite said front and back surfaces, said ~~planar~~ optical sheet having a sufficient thickness so that said microlenses on opposite said front and back surfaces are separated by a distance substantially equal to the focal length of said microlenses.

2. (Currently Amended) The optical sheet as recited in Claim 1, wherein said ~~planar~~ optical sheet ~~includes two parallel half sheets laminated together~~ is planar.

3. (Currently Amended) The optical sheet as recited in Claim 1, wherein the centers of said microlenses on said front surface and said back surface are transversely aligned along the sheet.

4. (Currently Amended) The optical sheet as recited in Claim ~~3~~ 1, wherein the pitch of the microlens array on said ~~planar~~ front and said back surfaces of the optical sheet ~~includes two parallel half sheets laminated together~~ are non-equal.

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5. (Currently Amended) The optical sheet as recited in Claim ~~2~~ 1, further including a ~~common substrate disposed between said half sheets~~ reflective surface disposed at a distance of half the focal length of said microlenses from the front surface, such that said front surface acts as the said back surface upon reflection of light illuminating the front surface, enabling the light homogenizing optical sheet to be a reflective light homogenizing optical sheet.

6. (Canceled)

7. (Currently Amended) The optical sheet as recited in Claim 1, wherein said ~~planar~~ optical sheet is made of flexible material.

8. (Currently Amended) ~~A light homogenizing~~ The optical sheet as recited in Claim 1, wherein said optical sheet is ~~comprising: a~~ non-planar such that each microlens is ~~sheet made of transparent material with parallel front and back surfaces, each said front and back surface including a microlens array formed thereon, said microlens array each including a plurality microlenses each~~ aligned and registered on the radius of curvature of said sheet.

9. (Currently Amended) A light homogenizing optical sheet comprising a ~~planar~~ substantially constant thickness sheet made of transparent material with ~~parallel~~ front and back surfaces, each said front and back surface including a microlens array formed thereon, said microlens array each including a plurality of non-hemispherical microlenses each registered with a non-hemispherical microlens on opposite said front and back surfaces such

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that exit cone chief ray angle is dependent on position across the sheet, said microlenses on opposite said front and back surfaces being separated by a distance of the sheet thickness substantially equal to the focal length of said microlens.

10. (Currently Amended) The optical sheet as recited in Claim 9, further including a second microlens array surface having non-equal pitch, as compared to the front microlens array surface pitch, such that the lenslet centers of both front and back surfaces are aligned ~~substantially near the center of the active sheet, yet lenslet centers near the edge of the active sheet exhibit transverse offsets of up to one lenslet spacing~~ with a specific transverse offset at a specific location within the plane of the sheet.

11. (Canceled)

12. (Original) The optical sheet as recited in Claim 9, further including a second microlens array surface having substantially equal pitch, as compared to the front microlens array surface pitch, such that the lenslet centers of both front and back surfaces are aligned with an offset of up to one lenslet spacing across the sheet.

13-19. (Canceled)

20. (New) An illumination system comprising: an array of one or more light-emitting sources located in a source plane; an optical sheet, separated from the source array by a first propagation distance; and an illumination plane separated from said optical sheet by a second

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propagation distance, so as to provide substantially uniform intensity output profile, within the illuminated area, versus position across said illumination plane, wherein the said optical sheet is a light homogenizing optical sheet, comprising a substantially constant thickness sheet made of transparent material with front and back surfaces, each said front and back surface including a microlens array formed thereon, said microlens array each including a plurality of non-hemispherical microlenses each aligned and registered with a non-hemispherical microlens on an opposite said front and back surfaces, said optical sheet having a sufficient thickness so that said microlenses on opposite said front and back surfaces are separated by a distance substantially equal to the focal length of said microlenses.

21. (New) The illumination system as recited in Claim 20, wherein the optical sheet is a tailored optical sheet, wherein the aligned and registered microlens arrays on said front and back surfaces have non-equal pitch, such that exit cones angles are dependent on position across the optical sheet and are allowed to overlap substantially at an illumination plane.

22. (New) The illumination system as recited in Claim 20, wherein the optical sheet is a tailored optical sheet, wherein the registered microlens arrays on said front and back surfaces have equal pitch and are transversely aligned, such that exit cones angles exhibit a constant, yet non-normal, exiting angle versus position across the optical sheet.

23. (New) The illumination system as recited in Claim 20, further including: an optical system disposed between said source plane and said optical sheet so as to collimate said sources of the source array; and an optical system disposed between said optical sheet and

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said illumination plane so as to condense a substantially top-hat intensity profile versus position across the plane of said illumination plane.

24. (New) An illumination system comprising: an array of one or more light-emitting sources located in a source plane; a first optical sheet, separated from the source array by a first propagation distance; a first illumination plane separated from said first optical sheet by a second propagation distance; a second optical sheet located at said first illumination plane; and a second illumination plane separated from said first illumination plane, so as to provide substantially uniform intensity output profile, within the illuminated area, versus position across said first illumination plane and to provide substantially uniform intensity output profile versus position across said second illumination plane as well as versus angle within the illuminated area of said second illumination plane, wherein the said optical sheets are light homogenizing optical sheets, each comprising a substantially constant thickness sheet made of transparent material with front and back surfaces, each said front and back surface including a microlens array formed thereon, said microlens array each including a plurality of non-hemispherical microlenses each aligned and registered with a non-hemispherical microlens on an opposite said front and back surfaces, said optical sheet having a sufficient thickness so that said microlenses on opposite said front and back surfaces are separated by a distance substantially equal to the focal length of said microlenses.

25. (New) The illumination system as recited in Claim 24, wherein at least one optical sheet is a tailored optical sheet, wherein the aligned and registered microlens arrays on said front and back surfaces have non-equal pitch, such that exit cones angles are dependent on position

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across the optical sheet and are allowed to overlap substantially at an illumination plane.

26. (New) The illumination system as recited in Claim 24, wherein at least one optical sheet is a tailored optical sheet, wherein the registered microlens arrays on said front and back surfaces have equal pitch and are transversely aligned, such that exit cones angles exhibit a constant, yet non-normal, exiting angle versus position across the optical sheet.

27. (New) The illumination system as recited in Claim 24, further including: an optical system disposed between said source plane and said first optical sheet so as to collimate said sources of the source array; an optical system disposed between said first optical sheet and said second optical sheet so as to condense a substantially top-hat intensity profile versus position across the plane of said second optical sheet; and an optical system disposed between said second optical sheet and said second illumination plane so as to provide a substantially top-hat intensity profile versus position across said second illumination plane, as well as versus angle α_3 within the illuminated area.

28. (New) The illumination system as recited in Claim 27 wherein the tiling patterns of the first light homogenizing optical sheet and the second light homogenizing optical sheet are not the same, such that a uniform top-hat intensity profile exhibiting x/y plane shape due to the tiling pattern of the light homogenizing sheet in plane x_2 is formed at plane x_3, while the output exit cone shape emanating from plane x_3 exhibits shape due to the tiling pattern of the light homogenizing sheet in plane x_1.

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29. (New) The reflective optical sheet as recited in Claim 5, further including an array of one or more light-emitting sources located in a source plane, and an optical system, prior to the sheet, so as to form an illumination system capable of providing top-hat uniformity at an illumination plane.

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